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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/588,810

08/09/2006

Jurgen Deininger

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04/10/2009

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EXAMINER

LISTVOYB, GREGORY

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

04/10/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/588,810	Applicant(s) DEININGER ET AL.	
	Examiner GREGORY LISTVOYB	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/26/2009 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Mohrschladt (US 6359020) herein Mohrschladt or Bassler et al (WO 0208313, cited with equivalent US 6815527) herein Bassler in combination with Donck (US 2003/02066835) herein Donck (necessitated by Amendment).

Mohrschladt or Bassler disclose a process according to claim 11 that comprises the following stages:

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(1) reacting aminonitriles or dinitriles and diamines or mixtures thereof, and optionally together with further polyamide-forming monomers and/or oligomer with the aqueous medium in the reactor at a temperature from 90 to 400°C and a pressure from 0.1 to 35x10⁶ Pa to obtain a reaction mixture,

(2) further reacting the reaction mixture at a temperature from 150 to 400°C and a pressure which is lower than the stage 1 pressure, wherein the temperature and the pressure are chosen such that a first gas phase and a first liquid phase are obtained and the first gas phase is separated from the first liquid phase,

(3) admixing the first liquid phase with a gaseous or liquid phase comprising water or an aqueous medium at a temperature from 90 to 350°C and a pressure from 0.1 to 30 x 10⁶ Pa to obtain a product mixture.

(4) postcondensing the product mixture at a temperature from 200 to 350°C and a pressure which is lower than the stage 3 pressure, if stage 3 is carried out, wherein the temperature and the pressure are chosen such that a second gaseous phase, which comprises water and ammonia, and a second liquid phase, which comprises the polyamide, are obtained (see Mohrschladt, Column 2, line 25 and Bassler, Column 2, line 15).

Mohrschladt teaches that the starting mixture consist of aminocapronitrile and water or extract water at 1:6 molar ratio, where the extractables (solid) content of the extract water used is within the range of 6-7% (see Examples, column 14, line 45).

Note that 1:6 molar ratio means 126 parts of aminocapronitrile and 106 parts of water, considering that MW of the monomer is 126 and MW of water is 18. Therefore, limitation of claim 1 regarding 35-95% of aqueous media is met.

Regarding Claim 17, Mohrschladt or Bassler disclose Titanium Oxide catalyst (see Bassler, Column 6, line 30, Mohrschladt, Column 5, line 45).

In reference to Claim 18, Mohrschladt or Bassler disclose a reactor having a vertically disposed longitudinal axis wherein, in the reactor, the reaction product is removed from the bottom and ammonia formed and any further low molecular weight compounds formed and water are taken off overhead, wherein the reactor (see Mohrschladt, Column 5, line 10).

Regarding Claim 20, Mohrschladt or Bassler disclose aqueous media with solids content of 20-90 and the solids are lactams and cyclic oligomeric lactams having two to six ring members that are derived from the aminonitrile used (see Mohrschladt, Column 2, line 20).

Mohrschladt or Bassler do not disclose the aqueous medium are introduced into the reactor at two or more different locations along the vertical longitudinal axis, where the fraction of aqueous media fed at the reaction inlet is in the range of 35-95% wt.

However, According to MPEP 2144.04, at mere duplication of parts has no patentable significance unless a new and unexpected result is produced., see also *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

In Specification Applicant listed the following benefits of multiple monomer feeding:

1. the reaction gives a more hydrolyzed prepolymer which consequently has a higher carboxyl end group content.
2. the temperature profile in the reactor can be smoothed or uniformized (see page 3, line 15 of the Specification).

However, no specific data related to the above benefit is presented. In addition, since the location of feeding port (especially minimal distance between the ports along vertical axes) along with temperature profile of the reactor are not presented. In other words, when the distance between two feeding ports along with vertical axes is very low (for instance 10-20 cm), a positive effect from multiple monomer feeding could not be expected.

In addition, multiple monomer feeding in a tubular reactors is well known.

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Donck teaches tubular polymerization reactors and processes, where multiple monomer feeds spaced lengthwise is applied (see Abstract).

Donck teaches that the design above provides high conversion of monomer into polymer and quality of the resulting polymer (see Abstract).

Donck discloses wide variety of monomers, which can be used in the process, including acrylamides, N-vinyl N-methylacetamides, etc. (see line 0043).

Note that Donck does not teach polycondensation process. However, he solves the same problem as one of the application, i.e. "2. the temperature profile in the reactor can be smoothed or uniformized". Donck teaches that the reaction in his method is highly exothermic (see line 0004). Therefore, split addition of monomers prevents local overheating, which leads to smoother and more uniform temperature profile. Thus, since Donck's reactor design solves the same problem as one of the Application, rejection under 35 USC 103(a) is applicable, even though prior art and application represent different fields of endeavor.

Therefore, it would be obvious to a person of ordinary skills in the art to apply Donck's multiple monomer feed to Mohrschladt or Bassler's process in order to increase monomer conversion and quality of the resulting polymer.

Response to Arguments

Applicant's arguments filed on 2/26/2009 have been fully considered but they are not persuasive.

Applicant argues that Marchildon teaches multiport introduction of steam into a reactor at the end opposite to where the reactants are introduced so that the steam travels countercurrently to the direction of the reactant flow.

However, in Final Rejection filed on 8/28/2008 Marchildon (US 6201096) is withdrawn. Therefore, the above argument is irrelevant at the present stage of prosecution.

Applicant argues that Claim 1, as amended, requires that (1) the aqueous medium have a solids content in the range from 2 % to 30 % by weight and that (2) the fraction of the total amount of said aqueous medium fed at the reactor inlet is in the range of from 35 % to 95 % by weight. Applicant argues that none of the references cited by the Examiner, either alone or in combination, teach or suggest either of these claim limitations.

This is incorrect. Mohrschladt teaches that the starting mixture consist of aminocapronitrile and water or extract water at 1:6 molar ratio, where the extractables (solid) content of the extract water used is within the range of 6-7% (see Examples, column 14, line 45).

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Note that 1:6 molar ratio means 126 parts of aminocapronitrile and 106 parts of water, considering that MW of the monomer is 126 and MW of water is 18. Therefore, limitation of claim 1 regarding 35-95% of aqueous media is met.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY LISTVOYB whose telephone number is (571)272-6105. The examiner can normally be reached on 10am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James J. Seidleck/

Supervisory Patent Examiner, Art Unit 1796

GL

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